mation following the injection, and how Dr. Kiliani explained the relief that followed the procedure. Any radical method of affecting a peripheral nerve that was causing repeated attacks of intense pain, either of a spasmodic or a continuous nature, must either cause a degeneration of its nerve fibers, which was distinctly an interstitial change, or cause an accumulation of leucocytes in the neighborhood of the nerve trunk, either as an inflammatory reaction, as in counter irritation, and so reduce any peri-neuritis or neuritis proper.

Dr. Kiliani said he had no explanation to offer as to the effect of these alcohol injections. As a matter of fact, nobody knew what neuralgia was or what produced it, and even careful microscopic examinations had failed to reveal any changes in the involved nerve. It could be safely assumed, however, that the injections of alcohol produced a certain amount of paresis of the nerve, and during the course of the injection the patient described the gradual numbness following the distribution of the nerve. This numbness disappeared in the course of a few days or weeks, but there was no return of the pain. Neuralgia patients were cured by the alcohol injections, inasmuch as the pain disappeared entirely, but a number of cases showed a recurrence after about a year, when a few further injections completed the cure. The operation is so small and connected with so little inconvenience, that the patients are quite willing to undergo the treatment again if necessary.

VOICE RECORDS IN NERVOUS AND MENTAL DISEASES.

By Dr. E. W. Scripture.

A method of recording the voice by a very small capsule was demonstrated, and records of voices in general paresis, hysteria, paralysis agitans, hemiplegia and epilepsy were compared with normal voice records. In these records, the vowels appeared as small waves on a line whose height indicated the rate of expulsion of breath. The regulation of the breath in general paresis was seen to be very irregular, while in hysteria it was erratic.

Curves of occlusives and fricatives were shown. The irregular and uncertain regulation of breath and muscular action were evident here also in general paresis. The faintness of breath action in paralysis agitans was noted. The duration of the sounds was often greatly prolonged in paresis and multiple sclerosis. The melody of speech was obtained by measuring the little waves, each singly. The melody of speech in general paresis showed excessive fluctuation. The peculiar monotony in epileptic voices was so marked that it could be regarded as a regular symptom of the disease. The senile tremolo in melody at the beginning of vowels was shown.

Dr. George H. Kirby said that while attending Professor Kraepelin's clinic at Munich last summer, he had an opportunity to do some work with the methods developed by Dr. Scripture for the study of speech defects and voice alterations. Among the patients upon whom the experiments were made there were some with general paresis in whom one could not find any speech defect by the ordinary tests, yet when the speech curves were studied one could clearly detect an alteration in the vibrations from the vowels, and peculiar fluctuations in the melody not observed in normal persons. These characteristics were quite clear in the records, but could not be detected otherwise, at least not by the untrained ear. The method thus might become really of practical value and

a diagnostic aid. In one patient with pupillary signs and a speech defect the diagnosis was between general paralysis and a hysterical psychosis. The record obtained from this patient showed peculiarities entirely different from those obtained from the general paralytics. The further observation, as well as the anamnesis, made it clear that the case was really one of hysteria.

Dr. L. Pierce Clark said that Dr. Scripture, for a number of years, had maintained that the voice of the epileptic was as characteristic as the facies, or more so, and that he had been induced to undertake with him a careful analysis of the voice in epilepsy. They had found that particularly in the *grand mal* type the voice of the epileptic showed certain alterations which were quite as characteristic as any of the well recognized stigmata of epilepsy. In order to test the accuracy of these observations on the voice in epilepsy, a number of patients at Randall's Island who were subject to that disease were mixed up with others who were suffering from various grades of mental deficiency about on a par with those usually observed in the chronic epileptic, and in nine of these patients out of ten, Dr. Scripture was able to detect merely from the speech whether the case was one of epilepsy or not.

Dr. Clark said that these voice studies seemed to him of immense scientific as well as practical value. For instance, it may be possible in the near future to roughly record in ordinary case-taking the melody, pitch and rhythm curves of speech in various functional nervous disorders, such as those of epilepsy, hysteria, neurasthenia and the like neuroses.

Dr. Onuf asked Dr. Scripture whether in epilepsy he could make the diagnosis from the voice alone, or whether he required the voice record, and what was his interpretation of the latter.

Dr. Scripture replied that while the existence of epilepsy could be recognized, after a little training, from the voice alone, he always preferred to base his opinion on the actual voice records and curves, when possible. When these were once heard and recognized, they were distinct and characteristic. The characteristic voice disappeared after the epilepsy was cured.

Dr. Leszynsky asked whether these characteristic voice curves were present in epilepsy of the ordinary type.

Dr. Dana asked how long after the onset of epilepsy this characteristic voice developed.

Dr. Clark said these questions could not be answered definitely, as the studies were only begun. The cases that had been studied were of the chronic type of epilepsy—patients in whom the disease had existed for periods ranging from two to ten years. The method had not yet been tried at the Craig Colony. He expressed the view that these characteristic voice curves would become as constant and fixed as other symptoms of the disease.

Dr. Scripture said the voice characteristics were apparent in the measurements of the curves long before they could be detected by the ear.

DISCUSSION ON THE ANTI-SYPHILITIC TREATMENT OF TABES AND PARESIS.

Dr. Dana said he had been treating these forms of nervous disease for many years by the use of mercury and iodides in the early stages,